

What is claimed is:

1. A traction device for use on a support surface comprising:  
a body contacting assembly adapted to releaseably contact an  
anatomical region of a patient;  
5                   tractive force exertion apparatus capable of exerting tractive force on  
the body contacting assembly, the tractive force exertion apparatus including:  
                  (a) a gas spring member having an upper end and a lower end, the  
gas spring member variable between an extended rest position and a retracted force  
exerting position;  
10                   (b) means for connecting the tractive force transferring system to  
tractive force exerting means assembly associated with the gas spring; and  
                  (c) means for retracting the gas spring member into the force-  
exerting position; and  
                  a tractive force transferring system, the tractive force transferring  
15                   system comprising a tension line having a first end and a second end, the first end  
connected to the body contacting assembly, the second end attached to the tractive  
force exerting apparatus.
2. The traction device of claim 1 wherein the tractive force exerting  
apparatus further includes:  
20                   a pulley mechanism located proximate to the upper end of the gas  
spring;  
                  an elongate member adjustably attached to the lower end of the gas  
spring; and  
                  a truss pivotally attached to the elongate member, the truss having a  
25                   first end region and a second end region, the first end region pivotally connected to  
the elongate member and located a spaced distance from the lower end of the gas  
spring, the second end region connected proximate to the pulley mechanism and  
proximate to the upper end of the gas spring member;  
                  wherein the tension line extends through the pulley mechanism from a  
30                   point of attachment with the body contacting assembly to a point of attachment with  
the elongate member of the tractive force exertion apparatus.

3. The traction device of claim 2 wherein the gas spring retraction means comprises a tension release line, the tension release line connected to the tension line and terminating in a structure suitable for releasable contact with an appendage of the patient.

5 4. The traction device of claim 1 wherein the gas spring retraction means further comprises a stroke limiter, the stroke limiter associated with a rod telescopically extending from the gas spring.

5. The traction device of claim 2 further comprising a bumper member, the bumper member attached to elongate member at a location distal to the truss.

10 6. The traction device of claim 2 wherein the gas spring retraction means comprises a motorized mechanism..

7. The traction device of claim 5 wherein the motorized mechanism comprises;

a linear actuator having a telescopically projecting member;

15 at least one linkage having a first end and an opposed second end, the linkage pivotally attached to the telescopically projecting member at the first end and pivotally attached to the elongate member at the second end, and

a motor actionable on the linear actuator.

20 8. The traction device of claim 7 further comprising at least one torsion spring, the torsion spring positioned at the pivotal connection between the linkage and the elongate member.

9. The traction device of claim 2 wherein the tractive force transferring means is mounted to the support surface.

25 10. The traction device of claim 9 wherein the support surface is a table, wherein the traction device further comprises at least one mounting bracket affixed to the table, the tractive force exertion apparatus mounted on the mounting bracket.

11. The traction device of claim 2 wherein the tractive force exertion apparatus further comprises:

a linear actuator positioned between and in contact with the elongated member and truss; and

5 a power supply mechanism capable of cycling the linear actuator.

12. The traction device of claim 11 wherein the tractive force exertion apparatus further comprises at least one linkage rotationally mounted between the linear actuator and the elongate member, wherein the linkage is moveable between a first rest position and a at least a second actuated position, wherein the linkage  
10 permits the gas spring to exert force on the tension line upon extension of the linear actuator yet allows the linear actuator to compress the gas spring when it is retracted.

13. The traction device of claim 1 wherein the tractive force transferring system further comprises at least one pulley assembly, the pulley assembly  
15 including a pulley in moveable engagement with the tension line and means for mounting the pulley assembly on the tractive force exertion apparatus at a location proximate the gas spring.

14. The traction device of claim 13 wherein the pulley assembly further includes at least one additional pulley and an adjustable triangular mounting  
20 assembly, the additional pulley rotatably mounted on an adjustable triangular mounting assembly, the triangular mounting assembly connected to either the elongate rod or the truss such that the at least one additional pulley is positioned at a spaced distance from the member to which it is connected.

15. The traction device of claim 1 wherein the body contacting assembly is  
25 configured to engage a body proximate to at least one of the cervical region or lumbar region.

16. The traction device of claim 2 further comprising rotational stop member, the rotational stop member located on the truss positioned adjacent to a junction between the truss and the pulley assembly.

17. A traction device for use on a support surface comprising:  
a body contacting assembly adapted to releasably contact an  
anatomical region of a patient;  
a tractive force exerting apparatus capable of exerting force on the  
5 body contacting assembly, the tractive force exerting apparatus including:  
(a) a gas spring member variable between an extended rest  
position and a retracted force exerting position, the gas spring having an upper end  
and an opposed lower end;  
(b) an elongate member adjustably attached to a lower end of the  
10 gas spring;  
(c) a truss having a first end region and a second end region, the  
first end region located a spaced distance from the lower end of the gas spring and  
the second end region located proximate to the elongate member, wherein the truss  
is in pivotal connection with the elongate member;  
15 a tractive force transferring system, the tractive force transferring  
system including a tension line having a first end and a second end, the first end  
connected to the body contacting assembly, the second end connected to the  
tractive force exerting apparatus; and  
a tension release line, the tension release line having a first end  
20 connected to the tension line and a second end configured to releasable contact an  
appendage of a patient utilizing the device.

18. The traction device of claim 17 further wherein the traction force  
exerting assembly comprises a pulley mechanism located proximate to an upper end  
of the gas spring, wherein the tension line extends through the pulley mechanism  
25 from a point of attachment with the body contacting assembly to a point of  
attachment with the elongate member of the tractive force exerting mechanism.

19. The traction device of claim 17 wherein the tractive force transferring  
means is mounted to the support surface.

20. The traction device of claim 16 wherein the support surface is a table,  
30 wherein the traction device further comprises at least one mounting bracket affixed  
to the table, the tractive force exertion apparatus mounted on the mounting bracket.

21. The traction device of claim 19 wherein the pulley assembly further includes at least one additional pulley and an adjustable triangular mounting assembly, the additional pulley rotatably mounted on an adjustable triangular mounting assembly, the triangular mounting assembly connected to either the elongate rod or the truss such that the at least one additional pulley is positioned at a spaced distance from the member to which it is connected.

22. The traction device of claim 17 wherein the body contacting assembly is configured to engage a body proximate to at least one of the cervical region or lumbar region.

23. A traction device for use on a support surface comprising:  
a body contacting assembly adapted to releasably contact an anatomical region of a patient;  
a tractive force exerting apparatus capable of exerting force on the body contacting assembly, the tractive force exerting apparatus including:  
(a) a gas spring member variable between an extended rest position and a retracted force exerting position, the gas spring having an upper end and an opposed lower end;  
(b) an elongate member adjustably attached to a lower end of the gas spring;  
(c) a truss having a first end region and a second end region, the first end region located a spaced distance from the lower end of the gas spring and the second end region located proximate to the elongate member, wherein the truss is in pivotal connection with the elongate member;  
a tractive force transferring system, the tractive force transferring system including a tension line having a first end and a second end, the first end connected to the body contacting assembly, the second end connected to the tractive force exerting apparatus; and  
a tension release mechanism, the tension release mechanism actionable on the tension line to release tractive force, the tension release mechanism including a motorized assembly actionable on the tension line to release on the tension and a power supply for the motorized assembly.

24. The traction device of claim 23 wherein the tension release mechanism comprises:

a linear actuator positioned between and in contact with the elongated member and truss; and

5 a linkage rotationally mounted between the linear actuator and the elongate member, wherein the linkage is moveable between a first rest position and a second retracted position, wherein the linkage permits the gas spring to exert force on the tension line upon extension of the linear actuator yet allows the linear actuator to compress the gas spring when it is retracted.

10 25. The traction device of claim 23 wherein the tractive force transferring means is mounted to the support surface and wherein the support surface is a table, wherein the traction device further comprises at least one mounting bracket affixed to the table, the tractive force exertion apparatus mounted on the mounting bracket.

15 26. The traction device of claim 23 further wherein the traction force exerting assembly comprises at least one pulley mechanism located proximate to an upper end of the gas spring, wherein the tension line extends through the pulley mechanism from a point of attachment with the body contacting assembly to a point of attachment with the elongate member of the tractive force exerting mechanism.

20 27. The traction device of claim 24 further comprising at least one torsion spring, the torsion spring positioned at the pivotal connection between the linkage and the elongate member.

25 28. The traction device of claim 23 wherein the pulley assembly further includes at least one additional pulley and an adjustable triangular mounting assembly, the additional pulley rotatably mounted on an adjustable triangular mounting assembly, the triangular mounting assembly connected to either the elongate rod or the truss such that the at least one additional pulley is positioned at a spaced distance from the member to which it is connected.